



SEQUENCE LISTING

<110> Nolan, Garry P.

Rozinov, Michael N.

<120> Fluorescent Dye Binding Peptides

<130> A65681-2/RMS/RMK/SPL

<140> 10/692,151

<141> 2003-10-14

<150> 09/419,381

<151> 1999-10-15

<150> 60/104,465

<151> 1998-10-16

<160> 122

<170> PatentIn Ver. 2.0

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Ile Pro His Pro Pro Met Tyr Trp Thr Arg Val Phe

1 5 10

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His Gly Trp Asp Tyr Tyr Trp Asp Trp Thr Ala Trp

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Ala Ser Asp Tyr Trp Asp Trp Glu Trp Tyr Tyr Ser

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Tyr Pro Asn Asp Phe Glu Trp Trp Glu Tyr Tyr Phe  
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His Thr Ser His Ile Ser Trp Pro Pro Trp Tyr Phe  
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Leu Glu Pro Arg Trp Gly Phe Gly Trp Trp Leu Lys

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Trp Tyr Asp Asp Trp Asn Asp Trp His Ala Trp Pro

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Trp His Met Ser Pro Ser Trp Gly Trp Gly Tyr Trp

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His Met Ser Trp Trp Glu Phe Tyr Leu Val Pro Pro

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Tyr Trp Asp Tyr Ser Trp His Tyr Tyr Ala Pro Thr

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Lys Pro Val Gln Tyr Trp Thr Gln Met Phe Tyr Thr

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Lys Pro Ala Gln Tyr Trp Thr Gln Met Phe Tyr Ser

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Lys Asn Val Gln Tyr Trp Thr Gln Met Phe Tyr Thr

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Lys His Val Gln Tyr Trp Thr His Met Phe Tyr Thr

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Lys His Val Gln Tyr Trp Thr Gln Met Phe Tyr Thr

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Asn His Val His Tyr Trp Thr Gln Met Phe Tyr Ser

1 5 10

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Thr His Val Gln Tyr Trp Thr Gln Met Phe Tyr Ser

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1 5 10

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His Gly Trp Asp Tyr Tyr Trp Asp Trp Thr Asp Trp

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His Gly Trp Asp Tyr Tyr Trp Asp Trp Pro Thr Trp

1 5 10

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1 5 10

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His Gly Trp Asp Tyr Asn Trp Asp Trp Thr Ala Trp

1 5 10

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1 5 10

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Tyr Pro Asn Glu Phe Asp Trp Trp Asp Tyr Tyr Tyr

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Tyr Pro Asn Asp Phe Glu Trp Trp Asp Tyr Tyr Tyr

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<400> 33

Tyr His Asn Asp Tyr Glu Trp Trp Glu Tyr Tyr Tyr

1 5 10

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<400> 34

Tyr Pro Asn Asp Phe Glu Trp Trp Glu Tyr Tyr Tyr

1 5 10

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Tyr Pro Asn Asp Phe Asp Trp Trp Glu Tyr Tyr Leu

1 5 10

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<400> 36

Tyr Thr His Asp Tyr Glu Trp Trp Glu Tyr Tyr Phe

1 5 10



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Tyr Pro Asn Asp Tyr Glu Trp Trp Glu Tyr Tyr Phe

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Tyr Pro Asp Ser Phe Glu Trp Trp Glu Tyr Tyr Phe

1 5 10

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Tyr His Asp Phe Glu Trp Trp Glu Tyr Tyr Phe

1 5 10

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Tyr Pro Tyr Asp Phe Glu Trp Trp Glu Tyr Tyr Met

1 5 10

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Lys His Val Gln Tyr Trp Thr Gln Met Phe Tyr Ser Gly Gly Gly Ser

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10

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Ala Glu Thr Val Gly Gly Gly His His His His His His

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Lys Pro Val Gln Tyr Trp Thr Gln Met Phe Tyr Thr Gly Gly Gly Ser

1

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10

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Ala Glu Thr Val Gly Gly Gly His His His His His His

20

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Asp Phe Leu Gln Trp Lys Leu Ala Arg Gln Lys Pro Gly Gly Gly Ser

1 5 10 15

Ala Glu Thr Val Gly Gly Gly His His His His His His

20 25

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His Gly Trp Asp Tyr Tyr Trp Asp Trp Thr Ala Trp Gly Gly Gly Ser

1 5 10 15

Ala Glu Thr Val Gly Gly Gly His His His His His His

20 25

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Ala Ser Asp Tyr Trp Asp Trp Glu Trp Tyr Tyr Ser Gly Gly Gly Ser

1 5 10 15

Ala Glu Thr Val Gly Gly Gly His His His His His His

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Tyr Pro Asn Asp Phe Glu Trp Trp Glu Tyr Tyr Phe Gly Gly Gly Ser

1 5 10 15

Ala Glu Thr Val Gly Gly Gly His His His His His His

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Tyr Pro Asn Glu Phe Asp Trp Trp Asp Tyr Tyr Tyr Gly Gly Gly Ser

1 5 10 15

Ala Glu Thr Val Gly Gly Gly His His His His His His

20 25

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<211> 29

<212> PRT

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<400> 48

Ala Ser Gly Ser Gly Ala Ser Gly Ser Ala Gly Ser Gly Gly Gly Ser

1 5 10 15

Ala Glu Thr Val Gly Gly Gly His His His His His His

20 25

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<222> (28)..(33)

<223> The x at positions 28 through 33 represents any  
amino acid residue.

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Met Gly Cys Ala Ala Leu Glu Ser Glu Val Ser Ala Leu Glu Ser Glu

1 5 10 15

Val Ala Ser Leu Glu Ser Glu Val Ala Ala Leu Xaa Xaa Xaa Xaa Xaa

20 25 30

Xaa Leu Ala Ala Val Lys Ser Lys Leu Ser Ala Val Lys Ser Leu Ala

35 40 45

Ser Val Lys Ser Lys Leu Ala Ala Cys Gly Pro Pro

50 55 60

<210> 50

<211> 67

<212> PRT

<213> Artificial Sequence

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Met Gly Arg Asn Ser Gln Ala Thr Ser Gly Phe Thr Phe Ser His Phe  
1 5 10 15

Tyr Met Glu Trp Trp Arg Gly Gly Glu Tyr Ile Ala Ala Ser Arg His  
20 25 30

Lys His Asn Lys Tyr Thr Thr Glu Tyr Ser Ala Ser Val Lys Gly Arg  
35 40 45

Tyr Ile Val Ser Arg Asp Thr Ser Gln Ser Ile Leu Tyr Gln Lys Lys  
50 55 60

Gly Pro Pro  
65

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Ser Lys Val Ile Leu Phe



1 5

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<211> 7

<212> PRT

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Ser Lys Val Ile Leu Phe Glu

1 5

<210> 53

<211> 7

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<400> 53

Ser Lys Val Ile Leu Phe Asp

1 5

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<211> 7

<212> PRT

<213> Monkey virus

<400> 54

Pro Lys Lys Lys Arg Lys Val

1

5

<210> 55

<211> 6

<212> PRT

<213> Homo sapiens

<400> 55

Ala Arg Arg Arg Arg Pro

1

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<210> 56

<211> 10

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<400> 56

Glu Glu Val Gln Arg Lys Arg Gln Lys Leu

1

5

10

<210> 57

<211> 9

<212> PRT

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<400> 57

Glu Glu Lys Arg Lys Arg Thr Tyr Glu

1

5

<210> 58

<211> 20

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<213> Xenopus

<400> 58

Ala Val Lys Arg Pro Ala Ala Thr Lys Lys Ala Gly Gln Ala Lys Lys

1

5

10

15

Lys Lys Leu Asp

, 20

<210> 59

<211> 31

<212> PRT

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<223> Description of Artificial Sequence: synthetic

<400> 59

Met Ala Ser Pro Leu Thr Arg Phe Leu Ser Leu Asn Leu Leu Leu Leu

1 5 10 15

Gly Glu Ser Ile Leu Gly Ser Gly Glu Ala Lys Pro Gln Ala Pro

20 25 30

<210> 60

<211> 21

<212> PRT

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Met Ser Ser Phe Gly Tyr Arg Thr Leu Thr Val Ala Leu Phe Thr Leu

1 5 10 15

Ile Cys Cys Pro Gly

20

<210> 61

<211> 51

<212> PRT

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<400> 61

Pro Gln Arg Pro Glu Asp Cys Arg Pro Arg Gly Ser Val Lys Gly Thr  
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Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly  
20 25 30

Ile Cys Val Ala Leu Leu Leu Ser Leu Ile Ile Thr Leu Ile Cys Tyr  
35 40 45

His Ser Arg

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<210> 62

<211> 33

<212> PRT

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<223> Description of Artificial Sequence: synthetic

<400> 62

Met Val Ile Ile Val Thr Val Val Ser Val Leu Leu Ser Leu Phe Val  
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Thr Ser Val Leu Leu Cys Phe Ile Phe Gly Gln His Leu Arg Gln Gln

20

25

30

Arg

<210> 63

<211> 35

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<400> 63

Pro Asn Lys Gly Ser Gly Thr Thr Ser Gly Thr Thr Arg Leu Leu Ser

1

5

10

15

Gly His Cys Phe Thr Leu Thr Gly Leu Leu Gly Thr Val Thr Met Gly

20

25

30

Leu Leu Thr

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Met Gly Ser Ser Lys Ser Lys Pro Lys Asp Pro Ser Gln Arg

1 5 10

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Leu Leu Gln Arg Leu Phe Ser Arg Gln Asp Cys Cys Gly Asn Cys Ser

1 5 10 15

Asp Ser Glu Glu Glu Leu Pro Thr Arg Leu

20 25

<210> 66

<211> 20

<212> PRT

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<400> 66

Lys Gln Phe Arg Asn Cys Met Leu Thr Ser Leu Cys Cys Gly Lys Asn

1

5

10

15

Pro Leu Gly Asp

20

<210> 67

<211> 19

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<400> 67

Leu Asn Pro Pro Asp Glu Ser Gly Pro Gly Cys Met Ser Cys Lys Cys

1

5

10

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Val Leu Ser

<210> 68

<211> 5

<212> PRT



<213> Artificial Sequence

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Lys Phe Glu Arg Gln

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<210> 69

<211> 36

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<223> Description of Artificial Sequence: synthetic

<400> 69

Met Leu Ile Pro Ile Ala Gly Phe Phe Ala Leu Ala Gly Leu Val Leu

1 5 10 15

Ile Val Leu Ile Ala Tyr Leu Ile Gly Arg Lys Arg Ser His Ala Gly

20 25 30

Tyr Gln Thr Ile

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<210> 70

<211> 35

<212> PRT

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Leu Val Pro Ile Ala Val Gly Ala Ala Leu Ala Gly Val Leu Ile Leu

1 5 10 15

Val Leu Leu Ala Tyr Phe Ile Gly Leu Lys His His His Ala Gly Tyr

20 25 30

Glu Gln Phe

35

<210> 71

<211> 26

<212> PRT

<213> Yeast

<400> 71

Met Leu Arg Thr Ser Ser Leu Phe Thr Arg Arg Val Gln Pro Ser Leu

1 5 10 15

Phe Ser Arg Asn Ile Leu Arg Gln Ser Thr

20 25

<210> 72

<211> 25

<212> PRT

<213> Yeast

<400> 72

Met Leu Ser Leu Arg Gln Ser Ile Arg Phe Phe Lys Pro Ala Thr Arg

1 5 10 15

Thr Leu Cys Ser Ser Arg Tyr Leu Leu

20 25

<210> 73

<211> 64

<212> PRT

<213> Yeast

<400> 73

Met Phe Ser Met Leu Ser Lys Arg Trp Ala Gln Arg Thr Leu Ser Lys

1 5 10 15

Ser Phe Tyr Ser Thr Ala Thr Gly Ala Ala Ser Lys Ser Gly Lys Leu

20 25 30

Thr Gln Lys Leu Val Thr Ala Gly Val Ala Ala Ala Gly Ile Thr Ala

35 40 45

Ser Thr Leu Leu Tyr Ala Asp Ser Leu Thr Ala Glu Ala Met Thr Ala

50 55 60

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<211> 41

<212> PRT

<213> Yeast

<400> 74

Met Lys Ser Phe Ile Thr Arg Asn Lys Thr Ala Ile Leu Ala Thr Val

1 5 10 15

Ala Ala Thr Gly Thr Ala Ile Gly Ala Tyr Tyr Tyr Tyr Asn Gln Leu

20 25 30

Gln Gln Gln Gln Gln Arg Gly Lys Lys

35 40

<210> 75

<211> 15

<212> PRT

<213> Adenovirus

<400> 75

Leu Tyr Leu Ser Arg Arg Ser Phe Ile Asp Glu Lys Lys Met Pro

1 5 10 15

<210> 76

<211> 19

<212> PRT

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<223> Description of Artificial Sequence: synthetic

<400> 76

Leu Asn Pro Pro Asp Glu Ser Gly Pro Gly Cys Met Ser Cys Lys Cys

1 5 10 15

Val Leu Ser

<210> 77

<211> 15

<212> PRT

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<223> Description of Artificial Sequence: synthetic

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Leu Thr Glu Pro Thr Gln Pro Thr Arg Asn Gln Cys Cys Ser Asn

1 5 10 15

<210> 78

<211> 9

<212> PRT

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<223> Description of Artificial Sequence: synthetic

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Arg Thr Ala Leu Gly Asp Ile Gly Asn

1 5

<210> 79

<211> 20

<212> PRT

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Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu

1 5 10 15

Val Thr Asn Ser

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Met Ala Thr Gly Ser Arg Thr Ser Leu Leu Leu Ala Phe Gly Leu Leu

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Cys Leu Pro Trp Leu Gln Glu Gly Ser Ala Phe Pro Thr

20 25

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<211> 27

<212> PRT

<213> Preproinsulin

<400> 81

Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu

1 5 10 15

Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn

20 25

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<211> 18

<212> PRT

<213> Influenza

<400> 82

Met Lys Ala Lys Leu Leu Val Leu Leu Tyr Ala Phe Val Ala Gly Asp

1

5

10

15

Gln Ile

<210> 83

<211> 24

<212> PRT

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Met Gly Leu Thr Ser Gln Leu Leu Pro Pro Leu Phe Phe Leu Leu Ala

1

5

10

15

Cys Ala Gly Asn Phe Val His Gly

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<210> 84

<211> 14

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<221> UNSURE

<222> (3)..(10)

<223> The x at positions 3 through 10 represents a  
fluorotte of any amino acid.

<220>

<223> Description of Artificial Sequence: synthetic

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Met Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Gly Pro Pro  
1 5 10

<210> 85

<211> 2

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<223> Description of Artificial Sequence: synthetic

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Gly Ser  
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<210> 86

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<223> Description of Artificial Sequence: synthetic

<400> 86

Gly Ser Gly Gly Ser

1

5

<210> 87

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Gly Gly Gly Ser

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<400> 88

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agagtgagaa tagaaaggta ccactctccc 90

<210> 89

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<212> DNA

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agagtgagaa tagaaaggta ccactctccc 90

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<212> PRT

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<223> Description of Artificial Sequence: synthetic

<400> 90

Cys Thr Cys Cys Cys Cys Thr Thr Cys Gly Gly Cys Cys Gly Ala Ala

1 5 10 15

Cys Cys Thr Cys Cys Ala Cys Cys Ala Ala Ala Thr Ala Ala Thr

20 25 30

Ala Cys Thr Cys Cys Cys Ala Cys Cys Ala Cys Thr Cys Ala Ala Ala

35

40

45

Ala Thr Cys Ala Thr Thr Cys Gly Gly Ala Thr Ala Ala Gly Ala Gly

50

55

60

Thr Gly Ala Gly Ala Ala Thr Ala Gly Ala Ala Ala Gly Gly Thr Ala

65

70

75

80

Cys Cys Ala Cys Thr Cys Thr Cys Cys Cys

85

90

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<212> DNA

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agagtgagaa tagaaaggta ccactctccc

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<223> Description of Artificial Sequence: synthetic

<400> 92

gggagagtgg tacctttcta ttctcac

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<210> 93

<211> 42

<212> PRT

<213> Artificial Sequence

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<221> UNSURE

<222> (15)..(27)

<223> The x at positions 15 through 27 represents any  
amino acid.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 93

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Xaa Xaa

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5

10

15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Ala Pro Gly Ser

20

25

30

Lys Val Ile Leu Phe Glu Gly Gly Pro Gly

35

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<210> 94

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 94

Gly Pro Ala Gly

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<210> 95

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 95

Gly Ala Pro Gly

1

<210> 96

<211> 4

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<400> 96

Gly Gly Pro Gly

1

<210> 97

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 97

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Arg Thr

1

5

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Ile Trp Glu Pro Lys Glu Ala Ser Asn His Thr Gly Ala Pro Gly Ser

20

25

30

Lys Val Ile Leu Phe Glu Gly Gly Pro Gly

35

40

<210> 98

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 98

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Trp Ser

1 5 10 15

Lys Met Gly His Thr Val Thr Gly Ala Pro Gly Ser Lys Val Ile Leu

20 25 30

Phe Glu Gly Gly Pro Gly

35

<210> 99

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 99

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Arg Trp

1 5 10 15

Thr Trp Glu Pro Ile Ser Glu Gly Ala Pro Gly Ser Lys Val Ile Leu

20 25 30



Phe Glu Gly Gly Pro Gly

35

<210> 100

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 100

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Gly Asn

1

5

10

15

Gln Lys Cys Leu Gln His Asn Arg Cys Ser Thr Gly Ala Pro Gly Ser

20

25

30

Lys Val Ile Leu Phe Glu Gly Gly Pro Gly

35

40

<210> 101

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 101

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Ser Gln

1

5

10

15

Thr Trp Ser Phe Pro Glu His Gly Ala Pro Gly Ser Lys Val Ile Leu

20

25

30

Phe Glu Gly Gly Pro Gly

35

<210> 102

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 102

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Glu Pro

1

5

10

15

Met Ala Arg Pro Trp Glu Arg Lys Gln Asp Arg Gly Ala Pro Gly Ser

20

25

30

Lys Val Ile Leu Phe Glu Gly Gly Pro Gly

35

40

<210> 103

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 103

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Gly Thr  
1 5 10 15

Leu Ser Ala Thr Arg Pro Tyr Gly Arg Gln Trp Gly Ala Pro Gly Ser  
20 25 30

Lys Val Ile Leu Phe Glu Gly Gly Pro Gly  
35 40

<210> 104

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE

<222> (2)..(3)

<223> The x at positions 2 and 3 represents any amino  
acid.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 104

Arg Xaa Xaa Trp Glu Pro

1 5

<210> 105

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 105

Arg Thr Ile Trp Glu Pro Lys Glu Ala Ser Asn His Thr

1 5 10

<210> 106

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 106

Trp Ser Lys Met Gly His Thr Val Thr

1

5

<210> 107

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 107

Arg Trp Thr Trp Glu Pro Ile Ser Glu

1

5

<210> 108

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 108

Gly Asn Gln Lys Cys Leu Gln His Asn Arg Cys Ser Thr

1

5

10

<210> 109

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 109

Ser Gln Thr Trp Ser Phe Pro Glu His

1 5

<210> 110

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 110

Glu Pro Met Ala Arg Pro Trp Glu Arg Lys Gln Asp Arg

1 5 10

<210> 111

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 111

Gly Leu Thr Ser Ala Thr Arg Pro Tyr Gly Arg Gln Trp

1 5 10

<210> 112

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE

<222> (7)

<223> The x at position 7 represents either Glutamic  
acid or Aspartic acid.

<220>

<221> UNSURE

<222> (8)..(15)

<223> The x at positions 8 through 15 represents any  
amino acid.

<220>

<221> UNSURE

<222> (22)

<223> The x at position 22 represents either Glutamic  
acid or Aspartic acid.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 112

Ser Lys Val Ile Leu Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ser

1 5 10 15

Lys Val Ile Leu Phe Xaa

20

<210> 113

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 113

Tyr Trp Asp Trp

1

<210> 114

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE



<222> (2)

<223> The x at position 2 represents either Aspartic acid or Glutamic acid.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 114

Trp Xaa Tyr Tyr

1

<210> 115

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 115

Cys Cys Cys Thr Cys Ala Thr Ala Gly Thr Thr Ala Gly Cys Gly Thr

1

5

10

15

Ala Ala Cys Gly

20

<210> 116

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE

<222> (1)

<223> The xaa at position 1 represents either Lysine,  
Asparagine or Threonine.

<220>

<221> UNSURE

<222> (2)

<223> The xaa at position 2 represents either Histidine,  
Proline or Asparagine.

<220>

<221> UNSURE

<222> (3)

<223> The xaa at position 3 represents either Alanine or  
Valine.

<220>

<221> UNSURE

<222> (4)

<223> The xaa at position 4 represents either Histidine  
or Glutamine.

<220>

<221> UNSURE

<222> (8)

<223> The xaa at position 8 represents either Histidine

or Glutamine.

<220>

<221> UNSURE

<222> (12)

<223> The xaa at position 12 represents either Serine or  
Threonine.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 116

Xaa Xaa Xaa Xaa Tyr Trp Thr Xaa Met Phe Tyr Xaa

1

5

10

<210> 117

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE

<222> (1)

<223> The xaa at position 1 represents either Isoleucine  
or Leucine.

<220>

<221> UNSURE

<222> (4)

<223> The xaa at position 4 represents either Proline or

Arginine.

<220>

<221> UNSURE

<222> (10)

<223> The xaa at position 10 represents either Proline  
or Arginine.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 117

Xaa Pro His Xaa Pro Met Tyr Trp Thr Xaa Val Phe

1

5

10

<210> 118

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE

<222> (1)

<223> The xaa at position 1 represents either Histidine  
or Glutamine.

<220>

<221> UNSURE

<222> (2)

<223> The xaa at position 2 represents either Glutamic acid or Glycine.

<220>

<221> UNSURE

<222> (4)

<223> The xaa at position 4 represents either Aspartic acid or Glutamic acid.

<220>

<221> UNSURE

<222> (6)

<223> The xaa at position 6 represents either Tyrosine or Asparagine.

<220>

<221> UNSURE

<222> (11)

<223> The xaa at position 11 represents either Alanine, Aspartic acid, Proline or Threonine.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 118

Xaa Xaa Trp Xaa Tyr Xaa Trp Asp Trp Thr Xaa Phe Trp

1

5

10

<210> 119

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<221> UNSURE

<222> (2)

<223> The xaa at position 2 represents either Histidine,  
Proline, Threonine or is optionally omitted.

<220>

<221> UNSURE

<222> (3)

<223> The xaa at position 3 represents either Histidine,  
Asparagine, Serine or Tyrosine.

<220>

<221> UNSURE

<222> (4)

<223> The xaa at position 4 represents either Aspartic  
acid or Glutamic acid.

<220>

<221> UNSURE

<222> (5)

<223> The xaa at position 5 represents either  
Phenylalanine or Tyrosine.

<220>

<221> UNSURE

<222> (6)

<223> The xaa at position 6 presents either Aspartic acid or Glutamic acid.

<220>

<221> UNSURE

<222> (9)

<223> The xaa at position 9 represents either Aspartic acid or Glutamic acid.

<220>

<221> UNSURE

<222> (12)

<223> The xaa at position 12 represents either Phenylalanine, Leucine, Methionine or Tyrosine.

<220>

<223> Description of Artificial Sequence: synthetic

<400> 119

Tyr Xaa Xaa Xaa Xaa Xaa Trp Trp Xaa Tyr Tyr Xaa

1

5

10

<210> 120

<211> 48

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 120

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Arg Thr

1 5 10 15

Ile Trp Glu Pro Lys Glu Ala Ser Asn His Thr Gly Ala Pro Gly Ser

20 25 30

Lys Val Ile Leu Phe Glu Gly Gly Pro Gly His His His His His His

35 40 45

<210> 121

<211> 44

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 121

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Arg Trp

1 5 10 15

Thr Trp Glu Pro Ile Ser Glu Gly Ala Pro Gly Ser Lys Val Ile Leu

20 25 30

Phe Glu Gly Gly Pro Gly His His His His His His



35

40

<210> 122

<211> 44

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 122

Gly Gly Gly Ser Lys Val Ile Leu Phe Glu Gly Pro Ala Gly Ser Gly

1

5

10

15

Ser Ala Gly Ser Gly Ala Ser Gly Ala Pro Gly Ser Lys Val Ile Leu

20

25

30

Phe Glu Gly Gly Pro Gly His His His His His His

35

40